1. Determine the domain of the function below.

$$f(x) = \frac{4}{15x^2 - 5x - 20}$$

A. All Real numbers.

B. All Real numbers except $x = a$, where $a \in [-5, 0]$

C. All Real numbers except $x = a$, where $a \in [-27, -22]$

D. All Real numbers except $x = a$ and $x = b$, where $a \in [-5, 0]$ and $b \in [-0.67, 5.33]$

E. All Real numbers except $x = a$ and $x = b$, where $a \in [-27, -22]$ and $b \in [10, 15]$

---

2. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{12}{-54x + 12} + 1 = \frac{12}{-54x + 12}$$

A. $x \in [-0.78, 2.22]$

B. $x_1 \in [-0.9, 0.2]$ and $x_2 \in [0.22, 3.22]$

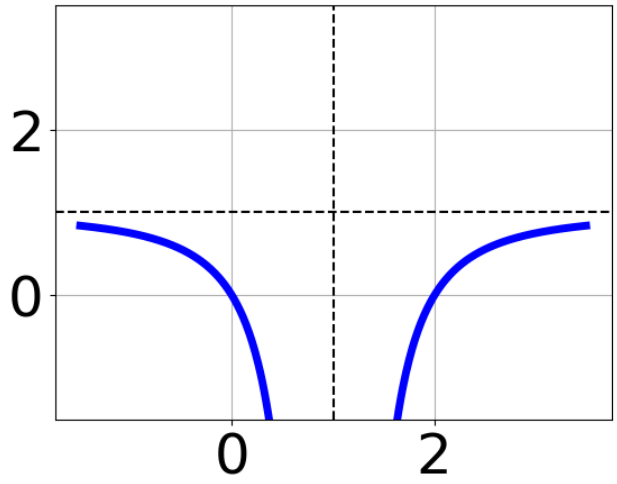
C. All solutions lead to invalid or complex values in the equation.

D. $x_1 \in [-0.2, 0.8]$ and $x_2 \in [0.22, 3.22]$

E. $x \in [-0.9, 0.2]$

---

3. Choose the equation of the function graphed below.



A. $f(x) = \dfrac{1}{x-1} + 1$

B. $f(x) = \dfrac{-1}{x+1} + 1$

C. $f(x) = \dfrac{-1}{(x+1)^2} + 1$

D. $f(x) = \dfrac{1}{(x-1)^2} + 1$

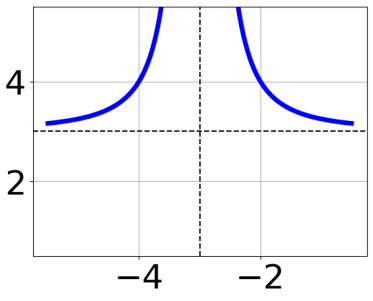
E. None of the above

---

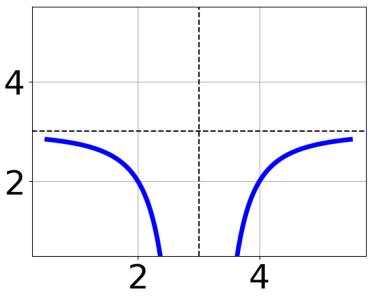
4. Choose the graph of the equation below.

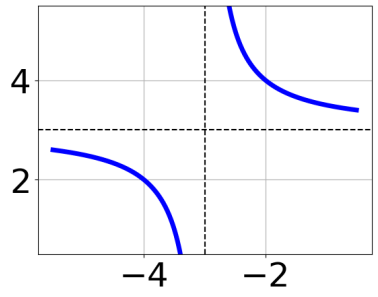
$$f(x) = \frac{-1}{x-3} + 3$$

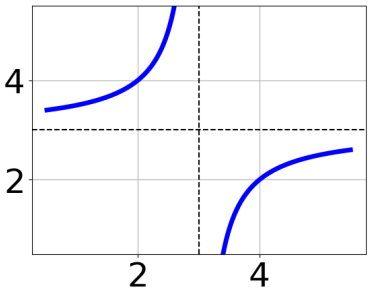
A.



B.



C. 

D. 

E. None of the above.

---

5. Determine the domain of the function below.

$$f(x) = \frac{6}{18x^2 - 48x + 30}$$

A. All Real numbers except $x = a$ and $x = b$, where $a \in [0.08, 1.26]$ and $b \in [1.34, 2.24]$

B. All Real numbers.

C. All Real numbers except $x = a$, where $a \in [14.2, 15.35]$

D. All Real numbers except $x = a$, where $a \in [0.08, 1.26]$

E. All Real numbers except $x = a$ and $x = b$, where $a \in [14.2, 15.35]$ and $b \in [35.49, 36.48]$

---

6. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{-3}{9x + 7} + 8 = \frac{-8}{-81x - 63}$$

A. $x \in [0.7, 0.98]$

B. $x \in [-1.72, 1.28]$

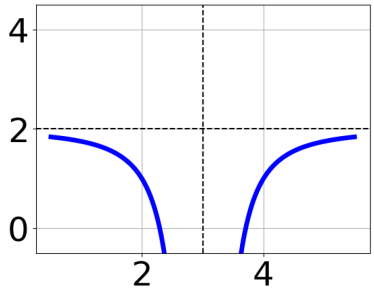
C. $x_1 \in [-0.73, -0.57]$ and $x_2 \in [0.2, 1.3]$

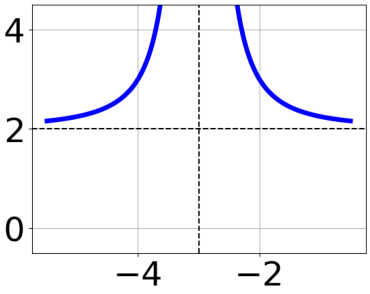
D. All solutions lead to invalid or complex values in the equation.

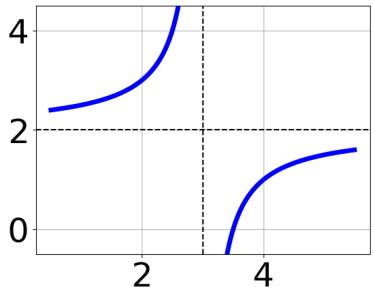
E. $x_1 \in [-1.11, -0.79]$ and $x_2 \in [-1.2, -0.2]$

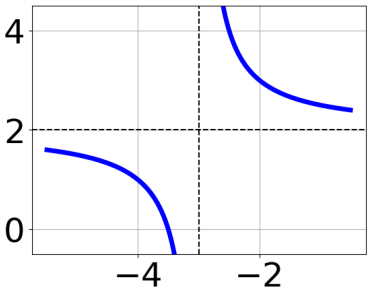
7. Choose the graph of the equation below.

$$f(x) = \frac{-1}{(x+3)^2} + 2$$

A. 

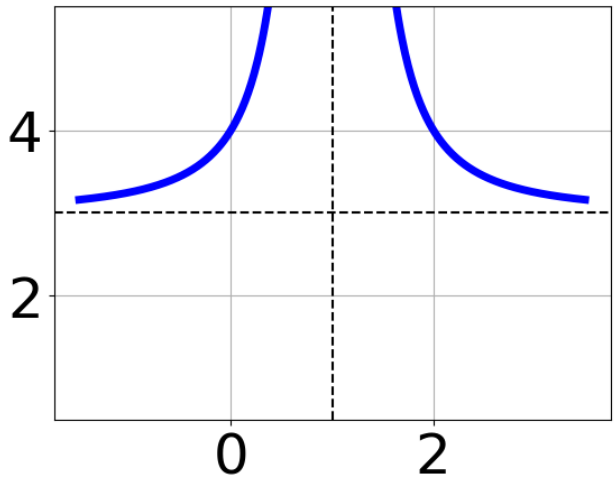
C. 

B. 

D. 

E. None of the above.

8. Choose the equation of the function graphed below.



A. $f(x) = \dfrac{-1}{x+1} + 3$

B. $f(x) = \dfrac{-1}{(x+1)^2} + 3$

C. $f(x) = \dfrac{1}{(x-1)^2} + 3$

D. $f(x) = \dfrac{1}{x-1} + 3$

E. None of the above

---

9. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{-4x}{-6x-6} + \frac{-2x^2}{-12x^2+12x+24} = \frac{-3}{2x-4}$$

A. $x_1 \in [-1.52, -0.93]$ and $x_2 \in [0, 4]$

B. All solutions lead to invalid or complex values in the equation.

C. $x \in [-1.52, -0.93]$

D. $x \in [1.74, 3.27]$

E. $x_1 \in [1.03, 1.6]$ and $x_2 \in [-4.89, -0.89]$

---

10. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{3x}{5x-2} + \frac{-2x^2}{15x^2-26x+8} = \frac{-4}{3x-4}$$

A. $x \in [-3.37, 0.31]$

B. $x \in [0.82, 2.75]$

C. $x_1 \in [-0.86, 0.67]$ and $x_2 \in [0.4, 2.4]$

D. $x_1 \in [-0.86, 0.67]$ and $x_2 \in [-4.78, 0.22]$

E. All solutions lead to invalid or complex values in the equation.
